

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Abdelgader Legnain et al.	§	Art Unit:	2618
		§		
Serial No.:	10/698,395	§	Confirmation No.:	2726
		§		
Filed:	November 3, 2003	§	Examiner:	Raymond S. Dean
		§		
For:	Antenna Systems with	§	Atty. Dkt. No.:	NRT.0206P1US
	Common Overhead for	§		(15658ROUS02U)
	CDMA Base Stations	§		
		§		

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Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37

Sir:

The final rejection of claims 1-8 and 10-31 is hereby appealed.

I. REAL PARTY IN INTEREST

The real party in interest is Nortel Networks Limited.

II. RELATED APPEALS AND INTERFERENCES

The following appeals may be related to, directly affect, or be directly affected by, or have a bearing on the Board's position in the pending Appeal:

U.S. Serial No.	Status
09/733,059	Pre-Appeal Conference Request and Notice of Appeal filed 10/25/2010 Appeal Brief filed 06/12/2006 Notice of Appeal filed 01/10/2006 Appeal Brief filed 11/04/2004 Notice of Appeal filed 09/10/2004

III. STATUS OF THE CLAIMS

Claims 1-8 and 10-31 have been finally rejected and are the subject of this appeal.

Claim 9 was indicated as containing allowable subject matter.

IV. STATUS OF AMENDMENTS

An Amendment under 37 C.F.R. § 41.33 has been filed as of even date herewith. Claim 9 has been amended from dependent form to independent form to place the claim in condition for allowance, as indicated by the Examiner.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element. Note also that the cited passages are provided as examples, as other passages in the specification or drawings not cited may also be relevant to the corresponding claim elements.

Independent claim 1 recites a system for a transmitter comprising:

a plurality of antennas (Figs. 2A, 2B:114, 116, 118) to define a respective plurality of fixed beams which together cover a coverage area (Spec., p. 9, ln. 18-21; p. 13, ln. 3-7);

for each antenna, a respective signal generator (Figs. 2A, 2B: 219, 221, 223) to generate a respective signal comprising a common overhead component common to all the signals, using a spreading code common to all the signal generators (Spec., p. 10, ln. 12-23; p. 14, ln. 24-26; p. 18, ln. 25 – p. 19, ln. 11);

transceiver circuitry (Figs. 2A, 2B, 220, 222, 224) coupling the signal generators to the antennas such that a respective one of the signals is transmitted by each corresponding antenna, the signals to be transmitted substantially simultaneously (Spec., p. 9, ln. 31 – p. 10, ln. 11; p. 13, ln. 7-16);

for each pair of said antennas having overlapping beams within said coverage area, the respective pair of signal generators to use the spreading code with a mutual micro-timing offset that is large enough that destructive cancellation substantially does not occur between the common overhead components transmitted on the overlapping beams, wherein a first spreading code used to generate a signal by a first of the pair of signal generators is offset by the mutual micro-timing from a second spreading code used to generate a signal by a second of the pair of signal generators (Spec., p. 10, ln. 24 – p. 11, ln. 9; p. 11, ln. 13 – p. 12, ln. 26).

Independent claim 26 recites a method in an antenna system comprising:

transmitting, from antennas (Figs. 2A, 2B: 114, 116, 118) of the antenna system, signals each having a common overhead component on a plurality of beams within a sector, with a micro-timing offset of a spreading code used by the signals transmitted on adjacent overlapping beams, wherein the micro-timing offset is large enough that destructive cancellation substantially does not occur between common overhead components on the adjacent overlapping beams, wherein a first spreading code used to generate a signal on a first of the overlapping beams is offset by the micro-timing offset from a second spreading code used to generate a signal on a second of the overlapping beams (Spec., p. 9, ln. 18-21; p. 13, ln. 3-7; p. 10, ln. 24 – p. 11, ln. 9; p. 11, ln. 13 – p. 12, ln. 26),

wherein the plurality of beams are transmitted in the sector that is from among plural sectors of a cell (Spec., p. 10, ln. 20-22).

Claim 25, set forth below, includes means plus function elements, which are identified as required by 37 C.F.R. § 41.37. For each means plus function element, the structure, material, or acts described in the Specification as corresponding to each claimed function is set forth by reference to page and line number, and to the drawings, by reference characters.

Dependent claim 25 recites a system according to claim 1 further comprising:

means (Fig. 3:318) in the transceiver circuitry for providing transmit phases that include a time dependent phase offset from one another, wherein the phase offset is chosen to reduce undesirable effects of signal cancellation (Spec., p. 18, ln. 4-24).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Claims 1-4, 6-7, 10-15, 26-28, 30, and 31 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,909,707 (Rotstein) in view of U.S. Patent No. 6,141,335 (Kuwahara) and further in view of Martinez-Munoz (“Nortel Networks CDMA Advantages of AABS Smart Antenna Technology”).¹**
- B. Claims 16 and 17 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Wong (U.S. Patent No. 6,330,460).**
- C. Claims 5, 8, and 29 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Neufeld (U.S. Patent No. 6,922,435).**
- D. Claims 18 and 21-24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Kapoor (U.S. Patent No. 6,795,424).**
- E. Claims 19-20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz in view of Kapoor (U.S. Patent No. 6,795,424) and further in view of Zhao (U.S. Patent No. 6,463,303).**
- F. Claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Benning (U.S. Patent Publication No. 2003/0022635).**

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

¹ Although page 3 of the 05/26/2010 Office Action indicated that claim 9 was rejected as obvious over Rotstein, Kuwahara and Martinez-Munoz, it is believed that this was in error. The text accompanying the rejection does not refer to claim 9, and page 9 of the Office Action indicated that claim 9 contains allowable subject matter.

A. Claims 1-4, 6-7, 10-15, 26-28, 30, and 31 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,909,707 (Rotstein) in view of U.S. Patent No. 6,141,335 (Kuwahara) and further in view of Martinez-Munoz (“Nortel Networks CDMA Advantages of AABS Smart Antenna Technology”).

1. Claims 1-4, 15, 28, 30.

Independent claim 1 recites a system for a transmitter comprising:

a plurality of antennas to define a respective plurality of fixed beams which together cover a coverage area;

for each antenna, a respective signal generator to generate a respective signal comprising a common overhead component common to all the signals, using a spreading code common to all the signal generators;

transceiver circuitry coupling the signal generators to the antennas such that a respective one of the signals is transmitted by each corresponding antenna, the signals to be transmitted substantially simultaneously;

for each pair of said antennas having overlapping beams within said coverage area, the respective pair of signal generators to use the spreading code with a mutual micro-timing offset that is large enough that destructive cancellation substantially does not occur between the common overhead components transmitted on the overlapping beams, wherein a first spreading code used to generate a signal by a first of the pair of signal generators is offset by the mutual micro-timing from a second spreading code used to generate a signal by a second of the pair of signal generators.

It is respectfully submitted that the obviousness rejection of claim 1 over Rotstein, Kuwahara, and Martinez-Munoz is erroneous.

To make a determination under 35 U.S.C. § 103, several basic factual inquiries must be performed, including determining the scope and content of the prior art, and ascertaining the differences between the prior art and the claims at issue. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459 (1965). Moreover, as held by the U.S. Supreme Court, it is important to identify a reason that would have prompted a person of ordinary skill in the art to combine reference teachings in the manner that the claimed invention does. *KSR International Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741, 82 U.S.P.Q.2d 1385 (2007).

With respect to claim 1, the Examiner conceded that Rotstein fails to disclose the following elements of claim 1:

for each antenna, a respective signal generator to generate a respective signal comprising a common overhead component common to all the signals, using a spreading code common to all the signal generators;

for each pair of said antennas having overlapping beams within said coverage area, the respective pair of signal generators to use the spreading code with a mutual micro-timing offset that is large enough that destructive cancellation substantially does not occur between the common overhead components transmitted on the overlapping beams, wherein a first spreading code used to generate a signal by a first of the pair of signal generators is offset by the mutual micro-timing from a second spreading code used to generate a signal by a second of the pair of signal generators.

05/26/2010 Office Action at 3-4. Instead, the Examiner cited Kuwahara and Martinez-Munoz as purportedly disclosing the subject matter of claim 1 conceded to be missing from Rotstein. *Id.* at 4-5.

Specifically, the Examiner cited the following passages of Kuwahara: column 7, lines 6-10, 33-37. *Id.* at 4. The cited passages in column 7 of Kuwahara refer to the example shown in Fig. 8 of Kuwahara, which depicts the transmission of a pilot signal, in which a constant time is provided to rotate the pilot signal between beams. However, the **time-based** rotation of transmission of the pilot signal as depicted in Fig. 8 of Kuwahara is quite different from the subject matter of claim 1, which recites the use of different **spreading codes** that are offset from each other by a mutual micro-timing offset. There is no hint given in Kuwahara of a first spreading code being used to generate a signal by a first of a pair of signal generators (that produce signals in overlapping beams within a coverage area) being offset by the mutual micro-timing offset from a second spreading code used to generate a signal by a second of the pair of signal generators.

The third reference, Martinez-Munoz, also provides no hint of the foregoing subject matter of claim 1. The Examiner pointed specifically to page 6 of Martinez-Munoz, which notes that three transmit beams each has the same PN offset. 05/26/2010 Office Action at 4. This page of Martinez-Munoz also refers to overhead channels common to the beams. However, to avoid destructive interference in the beam overlap regions, Martinez-Munoz teaches a technique to continuously shift a phase between the beams to eliminate static nulls. Martinez-Munoz, page 6. Shifting the phase between beams, as taught by Martinez-Munoz, involves a technique that is clearly different from the technique of claim 1, which involves production of different **spreading codes** based on the mutual micro-timing offset. Specifically, in claim 1, a first spreading code used to generate a signal by a first of the pair of signal generators is offset by the mutual micro-timing from a second spreading code used to generate a signal by a second of the pair of signal generators. As further recited in claim 1, for each pair of the antennas having overlapping beams within the coverage area, the respective pair of signal generators use the spreading code with a mutual micro-timing offset that is large enough that destructive cancellation substantially does not occur between the common overhead components transmitted on the overlapping beams. The use of the mutual micro-timing offset technique of claim 1 to generate different spreading codes is clearly different from shifting phase between beams to eliminate static nulls, as taught by Martinez-Munoz.

In view of the foregoing, it is clear that even if Rotstein, Kuwahara, and Martinez-Munoz could be hypothetically combined, the hypothetical combination of all three references would still not lead to the claimed subject matter of claim 1.

Moreover, no reason existed that would have prompted a person of ordinary skill in the art to combine Rotstein, Kuwahara, and Martinez-Munoz to achieve the claimed invention. In

Rotstein, different PN offsets are used to define different adjacent sectors within a cell. In Fig. 3 of Rotstein, four distinct PN offsets (A, B, C, D) are used, with the same PN offset reused in sectors that are spatially separated by 120°. Rotstein, 2:44-49. According to Rotstein, by assigning different PN offsets to neighboring sectors, interference between **distinct** pilot channels in corresponding **distinct** sectors is reduced, which would result in reduced pilot pollution. Rotstein, 1:26-28; 40-43; 2:60-62. Thus, Rotstein is concerned with reducing the problem of **different pilot** channels in different corresponding **sectors** of a cell interfering with each other. Significantly, it is noted that the teaching in Rotstein of distinct pilot channels in distinct sectors is quite different from what is recited in claim 1, namely that a **common** overhead component is common to all signals generated by respective signal generators that are transmitted by antennas.

The teachings of Rotstein are also inconsistent with the teachings of Kuwahara and Martinez-Munoz. A person of ordinary skill in the art would therefore not have been prompted to combine the teachings of Rotstein, Kuwahara, and Martinez-Munoz, to achieve the claimed subject matter. Moreover, Rotstein would have led a person of ordinary skill in the art to a solution in which distinct pilot channels in distinct sectors are communicated using different PN offsets to avoid pilot channel pollution, which is inconsistent with providing a common overhead component common to all signals, as recited in claim 1.

A person of ordinary skill in the art would have found no reason to combine the teachings of Rotstein, Kuwahara, and Martinez-Munoz. Therefore, claim 1 and its dependent claims are non-obvious over Rotstein, and Kuwahara, and Martinez-Munoz.

Reversal of the final rejection of the above claims is respectfully requested.

2. Claims 6, 7, 10, 11.

Claim 6 depends indirectly from claim 1, and is therefore allowable for at least the same reasons as claim 1. Moreover, claim 6 also depends from intervening claim 5. Claim 5 was rejected as purportedly obvious over Rotstein, Kuwahara, Martinez-Munoz, and Neufeld, with the Examiner conceding that Rotstein, Kuwahara, and Martinez-Munoz fail to disclose certain subject matter of claim 5. 05/26/2010 Office Action at 11-12. In view of the concession that Rotstein, Kuwahara, and Martinez-Munoz fail to disclose certain subject matter of intervening claim 5, the obviousness rejection of claim 6, which depends from claim 5, as purportedly obvious over Rotstein, Kuwahara, and Martinez-Munoz is clearly erroneous.

In addition, claim 6 recites:

the sector has a sector-specific spreading code, and wherein the respective mutual micro-timing offset between each pair of signals is realized by applying the sector-specific spreading code with a respective mutual micro-timing offset.

With respect to claim 6, the Examiner cited column 2, lines 24-53, of Rotstein as purportedly disclosing the subject matter of claim 6. 05/26/2010 Office Action at 6. Contrary to the allegation of the Examiner, there is no hint in this passage that the respective mutual micro-timing offset between each pair of signals is realized by applying the sector-specific spreading code **with a respective mutual micro-timing offset**. The cited column 2 passage of Rotstein explains that different sectors use different PN offsets, with an example shown in Fig. 3, which depicts four PN offsets A, B, C, D in different sectors. However, there is absolutely no hint in Rotstein of applying a sector-specific spreading code with a respective mutual **micro-timing offset**, contrary to the Examiner's allegation. Therefore, claim 6 and its dependent claims are further allowable for the foregoing reasons.

Reversal of the final rejection of the above claims is respectfully requested.

3. Claims 12-14.

Claims 12 and 13 depend indirectly from base claim 1, and are therefore allowable for at least the same reasons as claim 1. Moreover, each of claims 12 and 13 recite that the respective mutual micro-timing offset between each pair of CDMA signals is realized by applying a mutual micro-timing offset. The Examiner cited column 2, lines 24-53, and Fig. 3, of Rotstein as purportedly disclosing the subject matter of claims 12 and 13. As discussed above in connection with claim 6, the cited passages refer to different PN offsets used for different sectors. There is no hint of application of a micro-timing offset in the cited passages of Rotstein. Claim 12 (and its dependent claim 14) and claim 13 are therefore further allowable for the foregoing reasons.

Reversal of the final rejection of the above claims is respectfully requested.

4. Claims 26, 31.

Independent claim 26 recites a method in an antenna system comprising:

transmitting, from antennas of the antenna system, signals each having a common overhead component on a plurality of beams within a sector, with a micro-timing offset of a spreading code used by the signals transmitted on adjacent overlapping beams, wherein the micro-timing offset is large enough that destructive cancellation substantially does not occur between common overhead components on the adjacent overlapping beams, wherein a first spreading code used to generate a signal on a first of the overlapping beams is offset by the micro-timing offset from a second spreading code used to generate a signal on a second of the overlapping beams,

wherein the plurality of beams are transmitted in the sector that is from among plural sectors of a cell.

Claim 26 and its dependent claims are allowable over Rotstein, Kuwahara, and Martinez-Munoz for similar reasons as claim 1.

Reversal of the final rejection of the above claims is respectfully requested.

5. Claim 27.

Claim 27 depends from claim 26 and is therefore allowable for at least the same reasons as claim 26. Moreover, claim 27 further recites:

wherein the sector has a sector-specific spreading code, and wherein the respective micro-timing offset between each pair of signals is realized by applying the sector-specific spreading code with a respective mutual micro-timing offset.

For reasons similar to those stated above with respect to claim 6, the passages of Rotstein cited by the Examiner against the subject matter of claim 27 do not provide any teaching or hint of the claimed subject matter. Therefore, claim 27 is further allowable for the foregoing reasons.

Reversal of the final rejection of the above claim is respectfully requested.

B. Claims 16 and 17 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Wong (U.S. Patent No. 6,330,460).

1. Claims 16, 17.

In view of the allowability of base claim 1 over Rotstein, Kuwahara, and Martinez-Munoz, the obviousness rejection of dependent claims 16 and 17 over Rotstein, Kuwahara, Martinez-Munoz, and Wong has been overcome.

Reversal of the final rejection of the above claims is respectfully requested.

C. Claims 5, 8, and 29 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Neufeld (U.S. Patent No. 6,922,435).

1. Claims 5, 8, 29.

In view of the allowability of base claims 1 and 26 over Rotstein, Kuwahara, and Martinez-Munoz, the obviousness rejection of dependent claims 5, 8, and 29 over Rotstein, Kuwahara, Martinez-Munoz, and Neufeld has been overcome.

Reversal of the final rejection of the above claims is respectfully requested.

- D. Claims 18 and 21-24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Kapoor (U.S. Patent No. 6,795,424).**

1. Claims 18, 21, 24.

In view of the allowability of base claim 1 over Rotstein, Kuwahara, and Martinez-Munoz, the obviousness rejection of dependent claims 18 and 21-24 over Rotstein, Kuwahara, Martinez-Munoz, and Kapoor has been overcome.

Reversal of the final rejection of the above claims is respectfully requested.

- E. Claims 19-20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz in view of Kapoor (U.S. Patent No. 6,795,424) and further in view of Zhao (U.S. Patent No. 6,463,303).**

1. Claims 19, 20.

In view of the allowability of base claim 18 over Rotstein, Kuwahara, Martinez-Munoz, and Kapoor, the obviousness rejection of dependent claims 19 and 20 over Rotstein, Kuwahara, Martinez-Munoz, Kapoor, and Zhao has been overcome.

Reversal of the final rejection of the above claims is respectfully requested.

F. Claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over Rotstein in view of Kuwahara in view of Martinez-Munoz and further in view of Benning (U.S. Patent Publication No. 2003/0022635).

1. Claim 25.

In view of the allowability of base claim 1 over Rotstein, Kuwahara, and Martinez-Munoz, the obviousness rejection of dependent claim 25 over Rotstein, Kuwahara, Martinez-Munoz, and Benning has been overcome.

Reversal of the final rejection of the above claim is respectfully requested.

CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

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VIII. APPENDIX OF APPEALED CLAIMS

Claim 9 was indicated as containing allowable subject matter.

The claims on appeal are:

1. A system for a transmitter comprising:
 - a plurality of antennas to define a respective plurality of fixed beams which together cover a coverage area;
 - for each antenna, a respective signal generator to generate a respective signal comprising a common overhead component common to all the signals, using a spreading code common to all the signal generators;
 - transceiver circuitry coupling the signal generators to the antennas such that a respective one of the signals is transmitted by each corresponding antenna, the signals to be transmitted substantially simultaneously;
 - for each pair of said antennas having overlapping beams within said coverage area, the respective pair of signal generators to use the spreading code with a mutual micro-timing offset that is large enough that destructive cancellation substantially does not occur between the common overhead components transmitted on the overlapping beams, wherein a first spreading code used to generate a signal by a first of the pair of signal generators is offset by the mutual micro-timing from a second spreading code used to generate a signal by a second of the pair of signal generators.
2. A system according to claim 1, implemented for a plurality of coverage areas, each coverage area being a respective sector served by a base station, wherein the plurality of fixed beams together cover a corresponding one of the sectors, and wherein the sectors are associated with respective different spreading codes.
3. A system according to claim 1 wherein the transmitter is a CDMA base station, and each signal is a CDMA signal.

1 4. A system according to claim 2 wherein the transmitter is a CDMA base station, and each
2 signal is a CDMA signal.

1 5. A system according to claim 1, wherein the coverage area is a cell sector, wherein the
2 respective mutual micro-timing offset is less than a predefined maximum value such that the
3 mutual micro-timing offset does not cause a source of one of the signals to be incorrectly
4 identified as located in another cell sector.

1 6. A system according to claim 5 wherein:
2 the sector has a sector-specific spreading code, and wherein the respective mutual micro-
3 timing offset between each pair of signals is realized by applying the sector-specific spreading
4 code with a respective mutual micro-timing offset.

1 7. A system according to claim 6 wherein the sector-specific spreading code is a PN code.

1 8. A system according to claim 7 wherein each mutual micro-timing offset is at least one
2 chip and less than eight chips.

1 10. A system according to claim 6 wherein the sector-specific spreading code is a short code
2 having a sector specific offset used to distinguish between other sources using the same short
3 code, and wherein the respective mutual micro-timing offset is small enough that substantially no
4 ambiguity between different sector specific offsets occurs at a receiver in respect of any pair of
5 signals transmitted by adjacent antennas.

1 11. A system according to claim 10 wherein the short code is of length 2^{15-1} .

1 12. A system according to claim 4 wherein: the sector has a sector-specific spreading code,
2 and wherein the respective mutual micro-timing offset between each pair of CDMA signals is
3 realized by applying the sector-specific spreading code and then applying a mutual micro-timing
4 offset.

- 1 13. A system according to claim 4 wherein:
2 the sector has a sector-specific spreading code, and wherein the respective mutual micro-
3 timing offset between each pair of CDMA signals is realized by applying the micro-timing offset
4 to respective sector-specific spreading code generators.
- 1 14. A system according to claim 12 wherein the sector-specific spreading code is a PN code.
- 1 15. A system according to claim 1 wherein the common overhead component comprises at
2 least one of pilot channel, sync channel, paging channel, quick paging, advanced access channel
3 and auxiliary pilot.
- 1 16. A system according to claim 4 further comprising:
2 for each active user located within the sector, at a given instant only one of the CDMA
3 signals includes a user-specific traffic component generated by the respective CDMA signal
4 generator.
- 1 17. A system according to claim 16 wherein the one of the CDMA signals to include the
2 user-specific traffic component for a given user is identified by analyzing signal strength on
3 reverse links from the user, and selecting the CDMA signal corresponding with the reverse link
4 having a best signal strength.
- 1 18. A system according to claim 1 wherein the transceiver circuitry is further adapted to
2 provide transmit frequencies in a manner such that the transmit frequencies include a frequency
3 offset from one another.
- 1 19. A system according to claim 18 comprising a beam-forming matrix connected to the
2 plurality of antennas.
- 1 20. A system according to claim 19 wherein the beam-forming matrix is a Butler matrix.

1 21. A system according to claim 18 wherein the frequency offset is chosen to further reduce
2 undesirable effects of signal cancellation.

1 22. A system according to claim 18 wherein the signals have unique traffic channels.

1 23. A system according to claim 22 wherein the frequency offset is a multiple other than that
2 of a frame rate.

1 24. A system according to claim 18 wherein the frequency offset is greater than 30 Hz and
2 less than 120 Hz.

1 25. A system according to claim 1 further comprising:
2 means in the transceiver circuitry for providing transmit phases that include a time
3 dependent phase offset from one another, wherein the phase offset is chosen to reduce
4 undesirable effects of signal cancellation.

26. A method in an antenna system comprising:

transmitting, from antennas of the antenna system, signals each having a common overhead component on a plurality of beams within a sector, with a micro-timing offset of a spreading code used by the signals transmitted on adjacent overlapping beams, wherein the micro-timing offset is large enough that destructive cancellation substantially does not occur between common overhead components on the adjacent overlapping beams, wherein a first spreading code used to generate a signal on a first of the overlapping beams is offset by the micro-timing offset from a second spreading code used to generate a signal on a second of the overlapping beams,
wherein the plurality of beams are transmitted in the sector that is from among plural sectors of a cell.

27. A method according to claim 26 wherein the sector has a sector-specific spreading code, and wherein the respective micro-timing offset between each pair of signals is realized by applying the sector-specific spreading code with a respective mutual micro-timing offset.

28. A system according to claim 1, wherein the plurality of fixed beams defined by the corresponding plurality of antennas together cover a sector from among plural sectors of a cell.

29. A method according to claim 26, wherein the micro-timing offset is less than a predefined maximum value such that the micro-timing offset does not cause a source of one of the signals to be incorrectly identified as located in another sector.

30. A system according to claim 1, wherein the first spreading code is the spreading code common to all the signal generators, and the second spreading code is offset from the first spreading code by the mutual micro-timing offset.

31. A method according to claim 26, wherein the first spreading code is the spreading code of the sector, and the second spreading code is offset from the first spreading code by the micro-timing offset.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

The following related applications are under appeal:

U.S. Serial No.	Status
09/733,059	Pre-Appeal Conference Request and Notice of Appeal filed 10/25/2010 Appeal Brief filed 06/12/2006 Notice of Appeal filed 01/10/2006 Appeal Brief filed 11/04/2004 Notice of Appeal filed 09/10/2004

No Decisions on Appeal have been rendered by the Board in any of these appeals.